

Appln. No. 10/058,797
Amdt./Response filed November 21, 2005
Reply to Office Action of September 20, 2005

PATENT
Attorney Docket No. 10001024-1
Finnegan Ref. No. 07896.0050-00000

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-2. (canceled)

3. (currently amended): A micro pumping device according to claim 6 [[8]] wherein:
said cartridge comprises at least one component chosen from reservoirs, channels, and valves, wherein said component contains the flow of said biological fluid.

4. (currently amended): A micro pumping device according to claim 5 wherein:
said collapsor comprises ~~at least one bearing chosen from roller bearings and ball bearings.~~

5. (previously presented): A micro pumping device for transporting small volumes of biological fluid comprising:
a collapsor that delivers a compressive force to a deformable material, said collapsor comprising at least one bearing chosen from roller bearings and ball bearings; and
a cartridge adapted to receive at least one biological fluid, said cartridge including:
at least one pliable surface, said pliable surface comprising said deformable material which collapses in response to a compression force delivered from said collapsor; and
a rigid core adjacent to said pliable surface and opposite said collapsor, said rigid surface adapted to aid said collapsor in collapsing said pliable surface;

wherein said collapsor comprises a collapsor surface with protrusions having predetermined spacing, said predetermined spacing creating corresponding concavities in said pliable surface as said collapsor collapses said pliable surface against said rigid

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core, displacement from said corresponding concavities thereby causing a predetermined amount of biological fluid to be delivered from the cartridge.

6. (original): A micro pumping device according to claim 5 wherein:

said collapsor surface comprises a circumference of said bearing; said protrusions disposed at predetermined locations about said circumference such that each adjacent pair of protrusions defines a correspondingly predetermined volume.

7.-8. (canceled)

9. (currently amended): A micro pumping device according to claim 10 ~~[[8]]~~ wherein said device further comprises a network comprising staggered channels and reservoirs such that motion in one direction by said collapsor results in a sequential collapse of said staggered channels and reservoirs.

10. (currently amended): A micro pumping device according to claim 5 ~~[[9]]~~ wherein:
said network comprises a system of check valves preventing backflow through said reservoirs and channels.

11. (original): A micro pumping device according to claim 10 wherein said deformable material comprises a self-sealing membrane.

12. (withdrawn): A micro pumping device for transporting biological fluid comprising:
a first reservoir for containing at least one first biological fluid, said first reservoir comprising a deformable material;
a second reservoir for containing a second biological fluid; said second reservoir comprising a deformable material;
a mixing chamber to collect a mixture of the first and second biological fluids; said chamber connected to said first reservoir and said second reservoir through a channel, said channel forking into a first leg and a second leg, said first leg connected to said first reservoir, and said second leg connected to said second reservoir, said mixing chamber

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and said channel comprising a deformable material; and
a means for collapsing said first reservoir, said second reservoir, and said channel.

13. (withdrawn): A method of micro pumping biological fluid comprising:
collapsing a cartridge matrix comprising at least one pliable surface and at least one reservoir and channel, wherein said collapsing is adapted to transport biological fluid contained within said reservoir.

14. (withdrawn): A method of micro pumping according to claim 13 wherein:
said collapsing comprises sweeping across said at least one pliable surface with at least one of the following: a roller bearing, a ball bearing, or a unitary member.

15. (withdrawn): A method of micro pumping according to claim 13 wherein:
said collapsing comprises pressing down on said pliable surface with plungers.

16. (withdrawn): An analytical instrument comprising:
a cartridge adapted to receive at least one biological fluid, said cartridge comprising an analytical system chosen from electrochemical, chemiluminescence, optical, electrical, and mechanical methods, wherein said cartridge comprises a pliable surface; and
a collapsor adapted to transporting small volumes of biological fluid for said analytical system by collapsing said pliable surface with a compression force.

17. (withdrawn): An analytical instrument according to claim 16 wherein:
said collapsor comprises at least one bearing chosen from roller bearings and ball bearings.

18. (withdrawn): An analytical instrument according to claim 16 wherein:
said collapsor comprises a series of plungers, said plungers having a longitudinal axis oriented perpendicular to said pliable surface.

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19. (withdrawn): An analytical instrument according to claim 16 wherein:

said collapsor comprises a singular member, said member having a longitudinal axis oriented less than perpendicular to said pliable surface.

20. (previously presented): A micro pumping device according to claim 5 wherein said cartridge comprises at least one component chosen from reservoirs, channels, and valves, wherein said component contains the flow of said biological fluid.

21. (currently amended): A micro pumping device according to claim 10 ~~[[5]]~~ wherein said cartridge comprises at least one component chosen from reservoirs, channels, and valves, wherein said component contains the flow of said biological fluid.

22. (previously presented): A micro pumping device according to claim 5 wherein said device further comprises a network comprising staggered channels and reservoirs such that motion in one direction by said collapsor results in a sequential collapse of said staggered channels and reservoirs.

23. (previously presented): A micro pumping device according to claim 22 wherein said deformable material comprises a self-sealing membrane.

24. (previously presented): A micro pumping device according to claim 23 wherein said network comprises check valve means for preventing backflow through said reservoirs and channels.

25. (currently amended): A micro pumping device according to claim 21 ~~[[7]]~~ wherein said device further comprises a network comprising staggered channels and reservoirs such that motion in one direction by said collapsor results in a sequential collapse of said staggered channels and reservoirs.

26. (previously presented): A micro pumping device according to claim 25 wherein said deformable material comprises a self-sealing membrane.

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27. (currently amended): A micro pumping device according to claim 29 [[26]] wherein said network comprises check valve means for preventing backflow through said reservoirs and channels.

28. (canceled)

29. (currently amended): A micro pumping device according to claim 5 [[7]] wherein said deformable material comprises a self-sealing membrane.

30. (currently amended): A micro pumping device according to claim 6 [[8]] wherein said deformable material comprises a self-sealing membrane.